

CLAIMS

What is claimed is:

1. A tool for preparing a pipe end for engaging a mechanical pipe coupling, said tool comprising:
 - a body;
 - a first roller rotatably mounted on said body and having a first outwardly facing surface engageable with said pipe end;
 - a pivot arm having one end pivotally mounted on said body and a free end pivotally movable;
 - a second roller rotatably mounted on said free end of said pivot arm, said second roller having a second outwardly facing surface engageable with said pipe end;
 - a third roller rotatably mounted on said body and having a third outwardly facing surface engageable with said pipe end, said rollers being positioned in spaced relation about a central axis said second roller being pivotally movable toward and away from said central axis;
 - an actuator engageable with said pivot arm for moving said second roller toward and away from said central axis;
 - said pipe end being positionable along said central axis for engagement with said rollers, said body and said pipe end being rotatable relatively to one another about said central axis so as to engage said rollers circumferentially around said pipe end, said actuator for forcibly engaging said rollers with said pipe end, one of said rollers having a tool surface on said outwardly facing surface for preparing said pipe end.

2. A tool according to Claim 1, wherein said rollers are spaced from one another at angles of about 120° about said central axis.

3. A tool according to Claim 1, wherein said actuator comprises a jackscrew mounted on said body, said jackscrew engaging said free end of said pivot arm.

4. A tool according to Claim 1, wherein another of said rollers has a lengthwise taper angle formed by said other roller having a smaller diameter at one end and a larger diameter at an opposite end.

5. A tool according to Claim 4, wherein said taper angle is between about 1° and about 4° .

6. A tool according to Claim 4, wherein said other roller has a stop flange extending radially outwardly therefrom and positioned at said end with said larger diameter.

7. A tool according to Claim 4, wherein said other roller has an axis of rotation oriented at an angle to said central axis, said angle of said axis of rotation being substantially equal to said lengthwise taper angle so as to permit engagement of said outwardly facing surface of said other roller with said pipe end substantially continuously lengthwise along said other roller.

8. A tool according to Claim 7, wherein said other roller is mounted on said body.

9. A tool according to Claim 1, wherein said one roller having a tool surface is mounted on said body.

10. A tool according to Claim 9, wherein said tool surface is selected from the group consisting of a radiusing flange and a chamfering flange.

11. A tool according to Claim 9, wherein said tool surface includes a grooving flange extending radially outwardly from said one roller, said grooving flange being positioned intermediate between ends of said one roller.

12. A tool according to Claim 11, wherein said grooving flange comprises an angularly oriented circumferential face engageable with said pipe end.

13. A tool according to Claim 11, wherein said tool surface further includes a textured surface portion extending outwardly from said one roller, said textured surface portion being positioned in spaced relation to said grooving flange.

14. A tool according to Claim 1, further comprising a carriage movably mounted on said body facing said first and second rollers, said third roller being rotatably mounted on said carriage, said carriage being movable to adjustably position said third roller in spaced relation relative to said first and second rollers.

15. A tool according to Claim 14, further comprising a detent positioned on said body adjacent to said carriage and a fastener engaging said carriage and

said body, said fastener being engageable with said detent to fix said third roller in said spaced relation to said first and second rollers.

16. A tool according to Claim 15, wherein said detent comprises a socket.

17. A tool according to Claim 14, further comprising a plurality of third rollers rotatably mounted on said carriage, said third rollers each being positioned at a different distance from said central axis, said carriage being movable so as to adjustably position each of said third rollers in a predetermined spaced relation to said first and said second rollers one at a time, thereby adapting said tool to accommodate pipe ends having varying diameters.

18. A tool according to Claim 17, wherein said third rollers each have said tool surface thereon.

19. A tool according to Claim 1, wherein said one roller comprises a plurality of adjacent segments rotatable about a common axis independently of one another.

20. A tool for preparing a pipe end for engaging a mechanical pipe coupling, said tool comprising:

a body;

a plurality of rollers rotatably mounted on said body, each of said rollers having an outwardly facing surface engageable with said pipe end, said rollers being positioned in spaced relation about a central axis;

one of said rollers being a tool roller having a plurality of tool surfaces on said outwardly facing surface for preparing said pipe end;

one of said rollers being a movable roller movable toward and away from said central axis;

one of said rollers being a tapered roller having a lengthwise taper angle formed by said third roller having a smaller diameter at one end and a larger diameter at an opposite end;

said tool including an actuator mounted on said body for moving said movable roller toward and away from said central axis; and

said pipe end being positionable along said central axis for engagement with said rollers, said body and said pipe end being rotatable relatively to one another about said central axis so as to engage said rollers circumferentially around said pipe end, said actuator for forcibly engaging said rollers with said pipe end.

21. A tool according to Claim 20, wherein said tapered roller has an axis of rotation oriented at an angle to said central axis, said angle of said axis of rotation being substantially equal to said lengthwise taper angle so as to permit engagement of said outwardly facing surface of said tapered roller with said pipe end substantially continuously lengthwise along said tapered roller.

22. A tool according to Claim 20, wherein said tapered roller has a stop flange extending radially outwardly therefrom and positioned at said end with said larger diameter.

23. A tool according to Claim 20, further comprising a pivot arm having one end pivotally mounted on said body and a free end pivotally movable toward and away from said central axis, said movable roller being rotatably mounted on said free end of said pivot arm, said actuator engaging said pivot arm for moving said movable roller toward and away from said central axis.

24. A tool according to Claim 23, wherein said actuator comprises a jackscrew mounted on said body, said jackscrew engaging said free end of said pivot arm.

25. A tool according to Claim 20, wherein said tool surface is selected from the group consisting of a radiusing flange and a chamfering flange.

26. A tool according to Claim 25, wherein said tool surfaces include a grooving flange extending radially outwardly from said tool roller, said grooving flange being positioned intermediate between ends of said tool roller.

27. A tool according to Claim 26, wherein said grooving flange comprises an angularly oriented circumferential face engageable with said pipe end.

28. A tool according to Claim 26, wherein said tool surfaces include a textured surface portion extending radially outwardly from said tool roller, said textured surface portion being positioned in spaced relation to said grooving flange.

29. A tool according to Claim 28, wherein said tool roller comprises a plurality of adjacent segments rotatable about a common axis independently of one another, each of said segments having one of said tool surfaces positioned thereon.

30. A tool according to Claim 20, further comprising a carriage movably mounted on said body facing said central axis, one of said rollers being rotatably mounted on said carriage, said carriage being movable to adjustably position said one roller mounted on said carriage in spaced relation relative to other said rollers.

31. A tool according to Claim 30, further comprising a detent positioned on said body adjacent to said carriage and a fastener engaging said carriage and said body, said fastener being engageable with said detent to fix said third roller in said spaced relation to said first and second rollers.

32. A tool according to Claim 31, wherein said detent comprises a socket.

33. A tool according to Claim 30, wherein said tool roller is mounted on said carriage.

34. A tool according to Claim 33, further comprising a plurality of tool rollers rotatably mounted on said carriage, said tool rollers each being positioned at a different distance from said central axis, said carriage being movable so as to adjustably position each of said tool rollers in a predetermined spaced relation to said movable roller and said tapered

roller one at a time, thereby adapting said tool to accommodate pipe ends having varying diameters.

35. A tool according to Claim 34, wherein said tool rollers, said movable roller and said tapered roller are positionable substantially equiangularly from one another.

36. A tool for preparing a pipe end for engaging a mechanical pipe coupling, said tool comprising:

- a body;

- a first roller rotatably mounted on said body and having a first outwardly facing surface engageable with said pipe end;

- a second roller rotatably mounted on said body and having a second outwardly facing surface engageable with said pipe end, said second roller being movable relatively to said body;

- a carriage movably mounted on said body facing said first and second rollers, a plurality of third rollers being rotatably mounted on said carriage, each of said third rollers having an outwardly facing surface engageable with said pipe end, said first, second and third rollers being positioned in spaced relation about a central axis;

- an actuator mounted on said body for moving said second roller toward and away from said central axis, said third rollers each being positioned at a different distance from said central axis, said pipe end being positionable along said central axis for engagement with said rollers, said body and said pipe end being rotatable relatively to one another about said central axis so as to engage said rollers circumferentially around said pipe end, said actuator

for forcibly engaging said rollers with said pipe end, one of said rollers having a tool surface on said outwardly facing surface for preparing said pipe end, said carriage being movable so as to adjustably position each of said third rollers in a predetermined spaced relation to said first and second rollers one at a time, thereby adapting said tool to accommodate pipe ends having varying diameters.

37. A tool according to Claim 36, further comprising a pivot arm having one end pivotally mounted on said body and a free end pivotally movable toward and away from said central axis, said second roller being rotatably mounted on said free end of said pivot arm, said actuator engaging said pivot arm for moving said movable roller toward and away from said central axis.

38. A tool according to Claim 37, wherein said actuator comprises a jackscrew mounted on said body, said jackscrew engaging said free end of said pivot arm.

39. A tool according to Claim 36, wherein one of said rollers comprises a tapered roller having a lengthwise taper angle formed by said tapered roller having a smaller diameter at one end and a larger diameter at an opposite end.

40. A tool according to Claim 39, wherein said tapered roller has an axis of rotation oriented at an angle to said central axis, said angle being substantially equal to said taper angle so as to permit engagement of said outwardly facing surface of said

tapered roller with said pipe end substantially continuously lengthwise along said tapered roller.

41. A tool according to Claim 36, wherein each of said third rollers has said tool surface thereon.

42. A tool according to Claim 36, wherein said tool surface is selected from the group consisting of a radiusing flange and a chamfering flange.

43. A tool according to Claim 36, wherein said tool surface includes a grooving flange extending radially outwardly from one of said third rollers.

44. A tool according to Claim 43, wherein said grooving flange comprises an angularly oriented circumferential face engageable with said pipe end.

45. A tool according to Claim 43, wherein said tool surface includes a textured surface portion extending outwardly from said one of said third rollers, said textured surface portion being positioned in spaced relation to said grooving flange.